Energy Laboratories Inc

ANALYTICAL RUN Summary

17-Feb-22

Run ID FID-HEADSPACE_220131B

Run Start Date: 1/31/2022
Analyst: Jeff Whitmer
Ical:
Column ID: porapak Q
Comments: 2022 Calibration for methane, ethane, and ethene. thermometer used for temp:S94278.

Instrument ID	Description
1000_SGE_041819	1000 mL SGE Syringe _ Gas Tight

Std ID	Std Name	Std Amount	Std Units	Samp Amount	Samp Units	SampType	Expiration Date
10711	HC-Methane-W-CCV	0.3	ml			lcs	8/9/2022
12173	HC-Methane-W-CCV	0.3	ml			CCV	11/23/2023

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15038722	CCV	HC-METHANE-	CCV		1/31/2022 10:32:	1	R374783		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		103.519361		100	0	0	2	2	0	104%	85	115	0%	
Ethene	A	ppm		103.057616		100	0	0	2	2	0	103%	85	115	0%	
Methane	A	ppm		103.620197		100	0	0	2	2	0	104%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15038723	LCS	HC-METHANE-	LCS		1/31/2022 10:37:	1	R374783		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		99.5410871		100	0	0	2	2	0	100%	85	115	0%	
Ethene	A	ppm		99.2906216		100	0	0	2	2	0	99%	85	115	0%	
Methane	A	ppm		100.809349		100	0	0	2	2	0	101%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15038724	MBLK	HC-METHANE-	MBLK		1/31/2022 11:15:	1	R374783		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

1

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15038724	MBLK	HC-METHANE-	MBLK		1/31/2022 11:15:	1	R374783		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		0			0	0	2	2	0	0%	0	0	0%	
Ethene	A	ppm		0			0	0	2	2	0	0%	0	0	0%	
Methane	A	ppm		0			0	0	2	2	0	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15038725	CAL1	HC-METHANE-	CAL1		1/31/2022 11:22:	1	R374783		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		2.73020074		2.5	0	0	2	2	0	109%	50	150	0%	
Ethene	A	ppm		2.71682887		2.5	0	0	2	2	0	109%	50	150	0%	
Methane	A	ppm		2.85177946		2.5	0	0	2	2	0	114%	50	150	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15038726	CAL2	HC-METHANE-	CAL2		1/31/2022 11:28:	1	R374783		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		5.21991748		5	0	0	2	2	0	104%	85	115	0%	
Ethene	A	ppm		5.31883543		5	0	0	2	2	0	106%	85	115	0%	
Methane	A	ppm		4.91242836		5	0	0	2	2	0	98%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15038727	CAL3	HC-METHANE-	CAL3		1/31/2022 11:34:	1	R374783		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		10.3282735		10	0	0	2	2	0	103%	85	115	0%	
Ethene	A	ppm		10.1476990		10	0	0	2	2	0	101%	85	115	0%	
Methane	A	ppm		10.5936028		10	0	0	2	2	0	106%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15038728	CAL4	HC-METHANE-	CAL4		1/31/2022 11:40:	1	R374783		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15038728	CAL4	HC-METHANE-	CAL4		1/31/2022 11:40:	1	R374783		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		51.5359147		50	0	0	2	2	0	103%	85	115	0%	
Ethene	A	ppm		51.3647987		50	0	0	2	2	0	103%	85	115	0%	
Methane	A	ppm		52.2491534		50	0	0	2	2	0	104%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15038729	CAL5	HC-METHANE-	CAL5		1/31/2022 11:45:	1	R374783		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		93.9925939		100	0	0	2	2	0	94%	85	115	0%	
Ethene	A	ppm		93.8651881		100	0	0	2	2	0	94%	85	115	0%	
Methane	A	ppm		94.7521155		100	0	0	2	2	0	95%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15038730	CAL6	HC-METHANE-	CAL6		1/31/2022 11:51:	1	R374783		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		430.232311		500	0	0	2	2	0	86%	85	115	0%	
Ethene	A	ppm		434.391804		500	0	0	2	2	0	87%	85	115	0%	
Methane	A	ppm		451.873058		500	0	0	2	2	0	90%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15038731	CAL7	HC-METHANE-	CAL7		1/31/2022 12:02:	1	R374783		0	0	

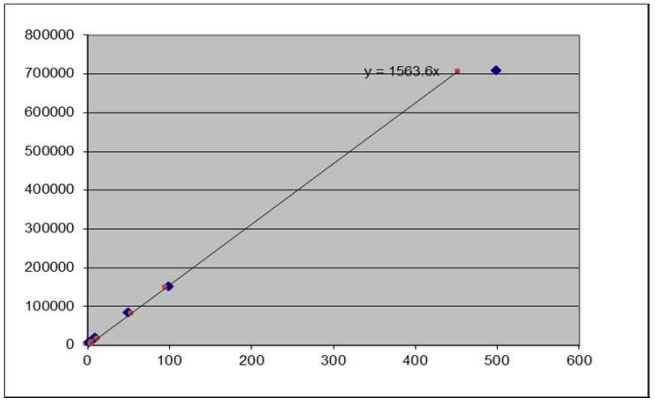
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		921.191920		1000	0	0	2	2	0	92%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15038732	CCV	HC-METHANE-	CCV		1/31/2022 12:08:	1	R374783		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Ethane	A	ppm		101.850441		100	0	0	2	2	0	102%	85	115	0%	
Ethene	A	ppm		102.540441		100	0	0	2	2	0	103%	85	115	0%	
Methane	A	ppm		103.796714		100	0	0	2	2	0	104%	85	115	0%	

Inst ID FID-HeadSpace

Blank,cts	STD ID					
0	#12173	1000000				
Decimal Amnt, Injtd/ 300uL	Equivalent	Sample Conc ppm	Area Counts	Response Factor	Date/Time	**Run Id**
0.0000025	**2.5**	**4459**		**1783.6**	1/31/2022 11:22	19265
0.000005	**5**	**7681**		**1536.2**	1/31/2022 11:28	19266
0.00001	**10**	**16564**		**1656.4**	1/31/2022 11:34	19267
0.00005	**50**	**81696**		**1633.92**	1/31/2022 11:40	19268
0.0001	**100**	**148153**		**1481.53**	1/31/2022 11:45	19269
0.0005	**500**	**706542**		**1413.084**	1/31/2022 11:51	19270
0.001	**1000**	**1440362**		**1440.362**	1/31/2022 12:02	19271
			StdDev	**133.7196**		
			Avg RF	**1563.585**		
			%RSD	**8.552118**		



Methane **MW=** **16.04**

Calculated Recoveries

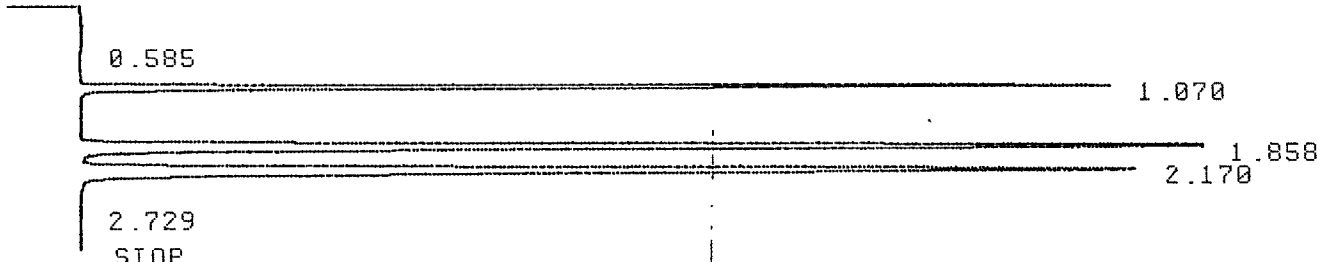
[PPM]	Area Cnts	PPM	% recovery
2.5	4459	2.851779464	114.07%
5	7681	4.912428361	98.25%
10	16564	10.59360283	105.94%
50	81696	52.24915341	104.50%
100	148153	94.75211547	94.75%
500	706542	451.873058	90.37%
1000	1440362	921.1919201	92.12%

Sample	Area Count	Dilution	Temp (˚C)	Concentration (ppm)	Date/Time	Analyst	Sample	Test Code	Analyte
CCV	162019	1	20	103.6201967	1/31/2022 10:32	jdw	CCV	HC-METHANE-CCV	Methane
CCV	321986	1	20	103.5193612	1/31/2022 10:32	jdw	CCV	HC-METHANE-CCV	Ethane
CCV	325807	1	20	103.057616	1/31/2022 10:32	jdw	CCV	HC-METHANE-CCV	Ethene
LCS	157624	1	20	100.8093488	1/31/2022 10:37	jdw	LCS	HC-METHANE-CCV	Methane
LCS	309612	1	20	99.54108708	1/31/2022 10:37	jdw	LCS	HC-METHANE-CCV	Ethane
LCS	313898	1	20	99.29062161	1/31/2022 10:37	jdw	LCS	HC-METHANE-CCV	Ethene
MBLK	432	1	20	0.27628812	1/31/2022 11:15	jdw	MBLK	HC-METHANE-CCV	Methane
MBLK	0	1	20	0	1/31/2022 11:15	jdw	MBLK	HC-METHANE-CCV	Ethane
MBLK	0	1	20	0	1/31/2022 11:15	jdw	MBLK	HC-METHANE-CCV	Ethene
CAL1	4459	1	20	2.851779464	1/31/2022 11:22	jdw	CAL1	HC-METHANE-CCV	Methane
CAL1	8492	1	20	2.73020074	1/31/2022 11:22	jdw	CAL1	HC-METHANE-CCV	Ethane
CAL1	8589	1	20	2.716828871	1/31/2022 11:22	jdw	CAL1	HC-METHANE-CCV	Ethene
CAL2	7681	1	20	4.912428361	1/31/2022 11:28	jdw	CAL2	HC-METHANE-CCV	Methane
CAL2	16236	1	20	5.219917477	1/31/2022 11:28	jdw	CAL2	HC-METHANE-CCV	Ethane
CAL2	16815	1	20	5.318835425	1/31/2022 11:28	jdw	CAL2	HC-METHANE-CCV	Ethene
CAL3	16564	1	20	10.59360283	1/31/2022 11:34	jdw	CAL3	HC-METHANE-CCV	Methane
CAL3	32125	1	20	10.32827352	1/31/2022 11:34	jdw	CAL3	HC-METHANE-CCV	Ethane
CAL3	32081	1	20	10.14769904	1/31/2022 11:34	jdw	CAL3	HC-METHANE-CCV	Ethene
CAL4	81696	1	20	52.24915341	1/31/2022 11:40	jdw	CAL4	HC-METHANE-CCV	Methane
CAL4	160297	1	20	51.53591474	1/31/2022 11:40	jdw	CAL4	HC-METHANE-CCV	Ethane
CAL4	162385	1	20	51.36479873	1/31/2022 11:40	jdw	CAL4	HC-METHANE-CCV	Ethene
CAL5	148153	1	20	94.75211547	1/31/2022 11:45	jdw	CAL5	HC-METHANE-CCV	Methane
CAL5	292354	1	20	93.99259386	1/31/2022 11:45	jdw	CAL5	HC-METHANE-CCV	Ethane
CAL5	296746	1	20	93.86518806	1/31/2022 11:45	jdw	CAL5	HC-METHANE-CCV	Ethene
CAL6	706542	1	20	451.873058	1/31/2022 11:51	jdw	CAL6	HC-METHANE-CCV	Methane
CAL6	1338192	1	20	430.2323114	1/31/2022 11:51	jdw	CAL6	HC-METHANE-CCV	Ethane
CAL6	1373289	1	20	434.3918039	1/31/2022 11:51	jdw	CAL6	HC-METHANE-CCV	Ethene
CAL7	1440362	1	20	921.1919201	1/31/2022 12:02	jdw	CAL7	HC-METHANE-CCV	Methane
CCV	162295	1	20	103.7967141	1/31/2022 12:08	jdw	CCV	HC-METHANE-CCV	Methane
CCV	316795	1	20	101.8504408	1/31/2022 12:08	jdw	CCV	HC-METHANE-CCV	Ethane
CCV	324172	1	20	102.5404411	1/31/2022 12:08	jdw	CCV	HC-METHANE-CCV	Ethene

Calibration: Methane, Ethane, Ethene
JDW
1/31/2022

*ID 12173-500X-CCV

* RUN #19262   JAN 31, 2022 10:32:58
START



RUN# 19262   JAN 31, 2022 10:32:58

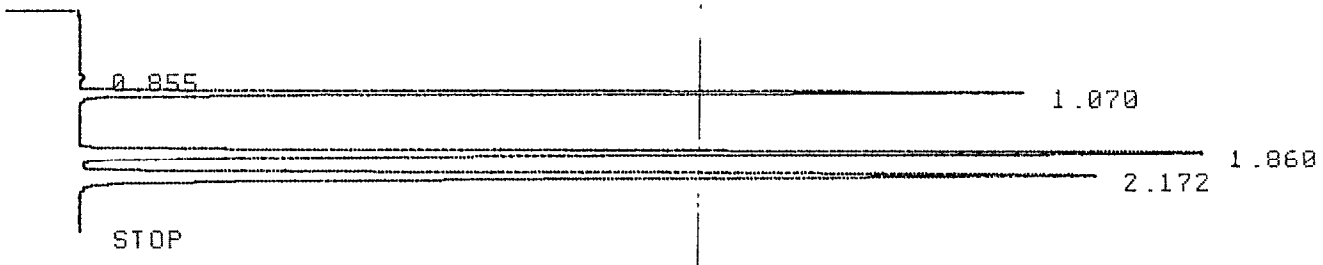
IDENTIFIER : 12173-500X-C
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.585	553	PP	.073	.06822
1.070	162019	PB	.046	19.98594
1.858	325807	VV	.076	40.19010
2.170	321986	VV	.089	39.71875
2.729	300	PV	.045	.03701

TOTAL AREA= 810665
MUL FACTOR=1.0000E+00

*ID 10711-LCS

* RUN #19263   JAN 31, 2022 10:37:36
START



RUN# 19263   JAN 31, 2022 10:37:36

IDENTIFIER : 10711-LCS
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.855	975	PV	.051	.12466
1.070	157624	PB	.049	20.15372
1.860	313898	BB	.076	40.13482
2.172	309612	BV	.089	39.58680

TOTAL AREA= 782109

*ID MB

* RUN #19264   JAN 31, 2022 11:15:04
START

0.824
1.070

STOP

RUN# 19264   JAN 31, 2022 11:15:04

IDENTIFIER : MB
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	432	VV	.049	100.00000

TOTAL AREA= 432
MUL FACTOR=1.0000E+00

*ID CAL1-2.5PPM

* RUN #19265   JAN 31, 2022 11:22:01
START

1.075

1.860
2.172

STOP

RUN# 19265   JAN 31, 2022 11:22:01

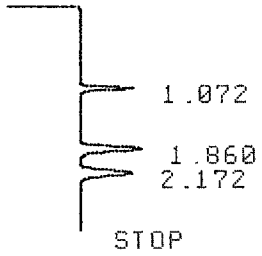
IDENTIFIER : CAL1-2.5PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.075	4891	VV	.048	22.26014
1.860	8589	VP	.079	39.09067
2.172	8492	VP	.091	38.64918

TOTAL AREA= 21972
MUL FACTOR=1.0000E+00

*ID CAL2-5PPM

* RUN #19266   JAN 31, 2022 11:28:46
START



RUN# 19266   JAN 31, 2022 11:28:46

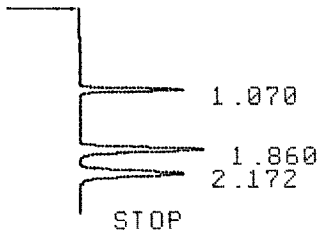
IDENTIFIER : CAL2-5PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.072	8113	BP	.045	19.70897
1.860	16815	PV	.078	40.84880
2.172	16236	VP	.089	39.44222

TOTAL AREA= 41164
MUL FACTOR=1.0000E+00

*ID CAL3-10PPM

* RUN #19267   JAN 31, 2022 11:34:40
START



RUN# 19267   JAN 31, 2022 11:34:40

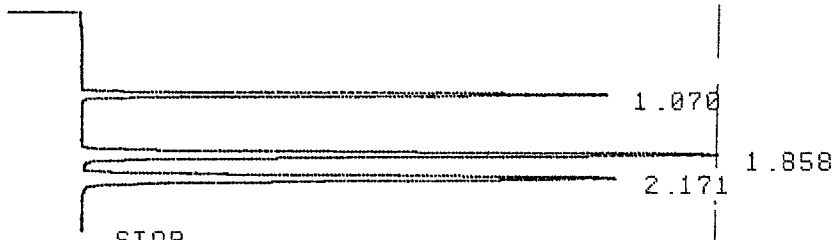
IDENTIFIER : CAL3-10PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	16996	PP	.047	20.93052
1.860	32081	PV	.075	39.50765
2.172	32125	VP	.089	39.56184

TOTAL AREA= 81202
MUL FACTOR=1.0000E+00

*ID CAL4-50PPM

* RUN #19268 JAN 31, 2022 11:40:12
START



RUN# 19268 JAN 31, 2022 11:40:12

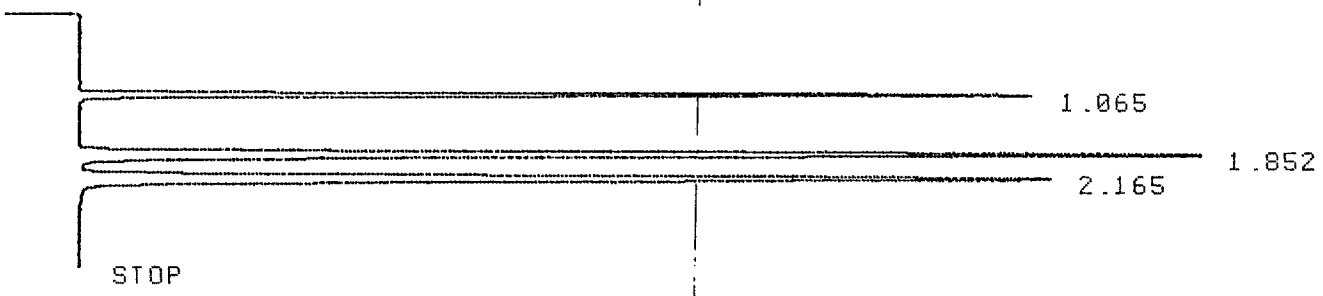
IDENTIFIER : CAL4-50PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.070	82128	PB	.045	20.28808
1.858	162385	PB	.075	40.11387
2.171	160297	BB	.088	39.59808

TOTAL AREA= 404810
MUL FACTOR=1.0000E+00

*ID CAL5-100PPM

* RUN #19269 JAN 31, 2022 11:45:49
START



RUN# 19269 JAN 31, 2022 11:45:49

IDENTIFIER : CAL5-100PPM
AREA%

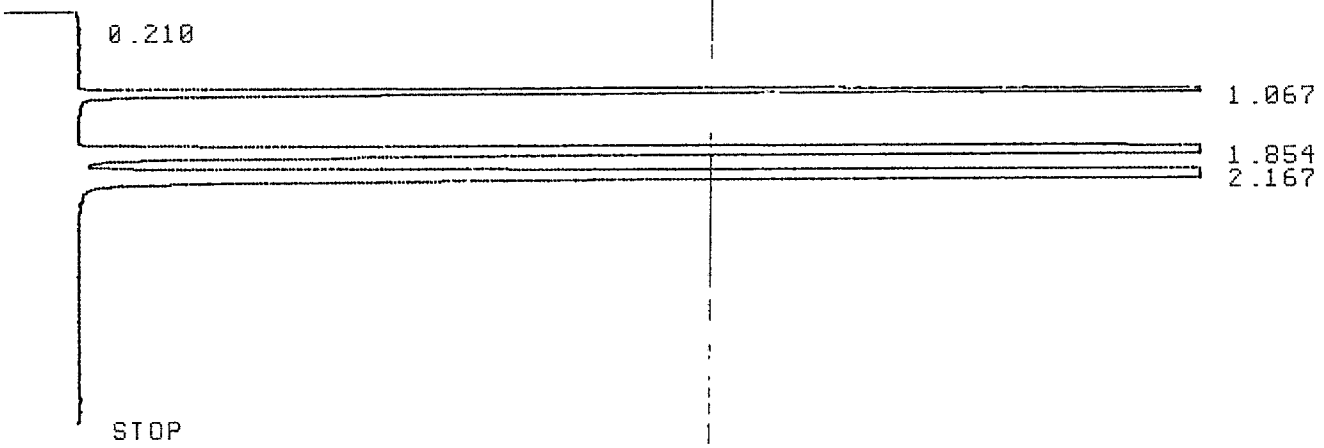
RT	AREA	TYPE	WIDTH	AREA%
1.065	148585	PB	.046	20.14206
1.852	296746	VV	.075	40.22666
2.165	292354	VP	.088	39.63126

TOTAL AREA= 737685
MUL FACTOR=1.0000E+00

~~*ID CAL5-500PPM~~ JOW 1/31/2022

*ID CAL6-500PPM

* RUN #19270   JAN 31, 2022 11:51:57
START



RUN# 19270   JAN 31, 2022 11:51:57

IDENTIFIER : CAL6-500PPM
AREA%

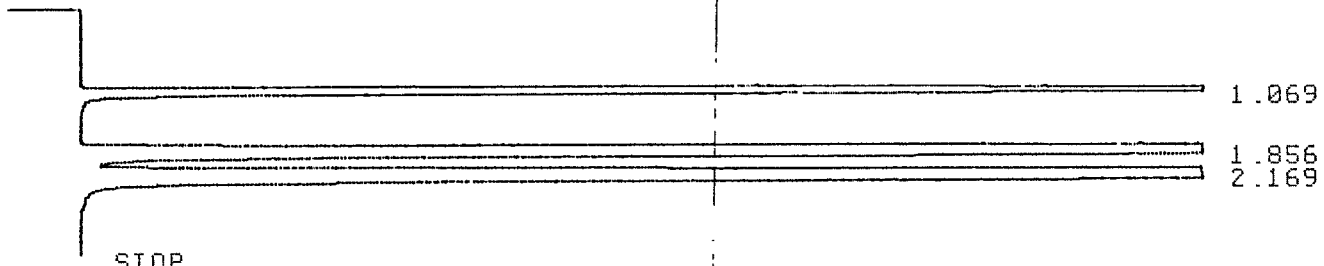
RT	AREA	TYPE	WIDTH	AREA%
1.067	706974	BB	.047	20.68110
1.854	1373289	PB	.078	40.17278
2.167	1338192	BB	.091	39.14610

TOTAL AREA=3418454
MUL FACTOR=1.0000E+00

*

*ID CAL7-1000PPM

* RUN #19271   JAN 31, 2022 12:02:20
START



RUN# 19271   JAN 31, 2022 12:02:20

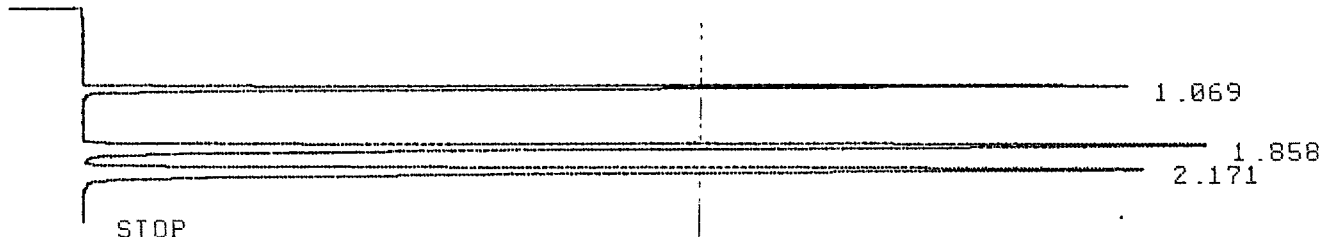
IDENTIFIER : CAL7-1000PPM
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.069	1440794	PB	.048	22.10318
1.856	2645432	PB	.082	40.58349
2.169	2432269	BB	.097	37.31334

TOTAL AREA=6518493
MUL FACTOR=1.0000E+00

*ID 12173-500X-CCV

* RUN #19272   JAN 31, 2022 12:08:57
START



RUN# 19272   JAN 31, 2022 12:08:57

IDENTIFIER : 12173-500X-C
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.069	162295	PB	.045	20.20449
1.858	324172	PB	.075	40.35684
2.171	316795	BB	.088	39.43858

TOTAL AREA= 803262
MUL FACTOR=1.0000E+00

Energy Laboratories Inc

ANALYTICAL RUN Summary

13-Mar-22

Run ID FID-HEADSPACE_220303A

Run Start Date: 3/3/2022
Analyst: Jeff Whitmer
Ical:
Column ID: porapak Q
Comments: See Preservation Comment column for sample pH; thermometer used for temp:S94278.

Instrument ID	Description
1000_SGE_041819	1000 mL SGE Syringe _ Gas Tight

Std ID	Std Name	Std Amount	Std Units	Samp Amount	Samp Units	SampType	Expiration Date
10711	HC-Methane-W-CCV	0.3	ml			lcs	8/9/2022
12173	HC-Methane-W-CCV	0.3	ml			CCV	11/23/2023

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065723	CCV	HC-METHANE-	CCV		3/3/2022 8:57:00	1	R375540		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		96.6061878		100	0	0	2	2	0	97%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065724	LCS	HC-METHANE-	LCS		3/3/2022 9:07:00	1	R375540		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		94.5544927		100	0	0	2	2	0	95%	85	115	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065725	LCSD	HC-METHANE-	LCSD		3/3/2022 9:24:00	1	R375540		0	2E+07	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		93.4851554		100	0	94.554493	2	2	0	93%	85	115	1%	

1

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065726	MBLK	HC-METHANE-	MBLK		3/3/2022 10:37:0	1	R375540		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.001	0	0%	0	0	0%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065727	B22021763-001I	HC-METHANE-	SAMP		3/3/2022 10:43:0	1	R375540		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065728	B22021763-005	HC-METHANE-	SAMP		3/3/2022 10:49:0	1	R375540		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065729	B22021763-006I	HC-METHANE-	SAMP		3/3/2022 10:55:0	1	R375540		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065730	B22021763-010	HC-METHANE-	SAMP		3/3/2022 11:09:0	1	R375540		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065731	B22021763-011I	HC-METHANE-	SAMP		3/3/2022 11:36:0	78	R375540		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.54043547			0	0	0.054912	0.156	0	0%	0	0	0%	

2

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065732	B22021763-011I	HC-METHANE-	DUP		3/3/2022 11:46:0	78	R375540		0	2E+07	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0.50268702			0	0.5404355	0.054912	0.156	0	0%	0	0	7%	

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065733	B22021763-015	HC-METHANE-	SAMP		3/3/2022 11:54:0	1	R375540		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065734	B22021763-016I	HC-METHANE-	SAMP		3/3/2022 12:11:0	1	R375540		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065735	B22021763-021	HC-METHANE-	SAMP		3/3/2022 12:23:0	1	R375540		0	0	

Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	mg/L		0			0	0	0.000704	0.002	0	0%	0	0	0%	U

Seq No	Lab ID	Test Code	Sample Typ	File ID	Analysis Date	DF	Batch ID	Prep Date	SPKref	RPDref	pmoist
15065736	CCV	HC-METHANE-	CCV		3/3/2022 12:32:0	1	R375540		0	0	

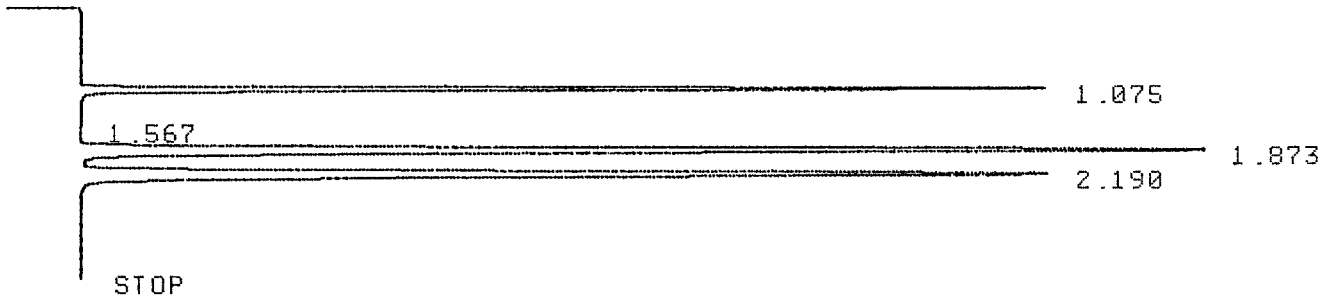
Analyte	T	Units	RAW	Final	Text	Spike	SPKref	RPDref	MDL	PQL	UQL	%REC	LOW	HIGH	%RPD	Q
Methane	A	ppm		98.6546852		100	0	0	2	2	0	99%	85	115	0%	

Sample ID	Area Count	Dilution Factor	Temperature (C)	Concentration	Date/Time Analyzed	Analyst	Sample Type	Test Code	Analyte	Headspace Volume	Liquid Volume
CCV	151052	1	20	96.60618783	3/3/2022 8:57	jdw	CCV	HC-METHANE-CCV	Methane		
LCS	147844	1	20	94.55449272	3/3/2022 9:07	jdw	LCS	HC-METHANE-CCV	Methane		
LCSD	146172	1	20	93.48515536	3/3/2022 9:24	jdw	LCSD	HC-METHANE-CCV	Methane		
MBLK	1035	1	20	0.000153742	3/3/2022 10:37	jdw	MBLK	HC-METHANE-W	Methane	10	32
B22021763-001I	1041	1	20	8.91E-07	3/3/2022 10:43	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22021763-005A	1099	1	20	9.51E-06	3/3/2022 10:49	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22021763-006I	1108	1	20	1.08E-05	3/3/2022 10:55	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22021763-010A	874	1	20	-2.39E-05	3/3/2022 11:09	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22021763-011I	47679	78	20	5.40E-01	3/3/2022 11:36	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22021763-011IDUP	44421	78	20	5.03E-01	3/3/2022 11:46	jdw	DUP	HC-METHANE-W	Methane	10	32
B22021763-015A	825	1	20	-3.12E-05	3/3/2022 11:54	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22021763-016I	967	1	20	-1.01E-05	3/3/2022 12:11	jdw	SAMP	HC-METHANE-W	Methane	10	32
B22021763-021A	1085	1	20	7.43E-06	3/3/2022 12:23	jdw	SAMP	HC-METHANE-W	Methane	10	32
CCV	154255	1	20	98.65468517	3/3/2022 12:32	jdw	CCV	HC-METHANE-CCV	Methane		

JDW
3/3/2022

*ID 12173-500X

* RUN #19431   MAR 3, 2022 08:57:28
START



RUN# 19431   MAR 3, 2022 08:57:28

IDENTIFIER : 12173-500X
AREA%

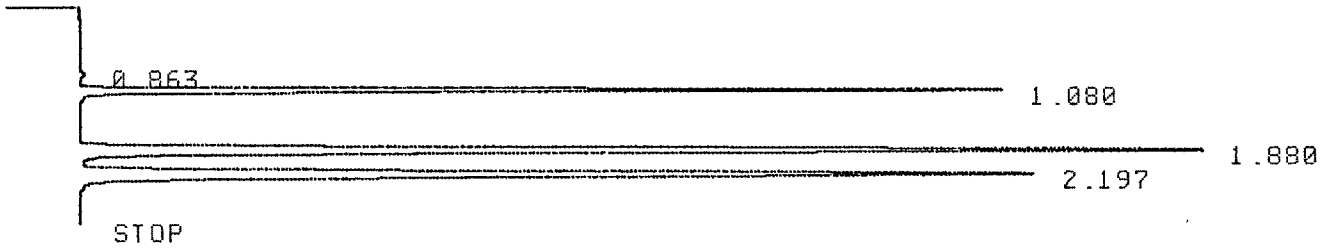
RT	AREA	TYPE	WIDTH	AREA%
1.075	151052	PB	.046	20.32834
1.567	343	PV	.049	.04616
1.873	298520	PB	.076	40.17437
2.190	293146	BB	.089	39.45114

TOTAL AREA= 743061
MUL FACTOR=1.0000E+00

*

*ID 10711-LCS

* RUN #19432   MAR 3, 2022 09:07:23
START



RUN# 19432   MAR 3, 2022 09:07:23

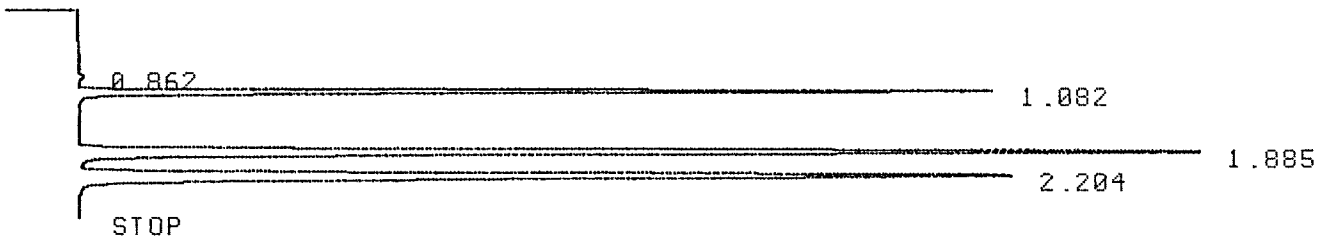
IDENTIFIER : 10711-LCS
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.863	931	VV	.047	.12686
1.080	147844	PB	.047	20.14495
1.880	295418	BB	.076	40.25312
2.197	289708	BB	.089	39.47509

TOTAL AREA= 733901
MUL FACTOR=1.0000E+00

*ID 10711-LCSD

* RUN #19433   MAR 3, 2022 09:24:37
START



RUN# 19433   MAR 3, 2022 09:24:37

IDENTIFIER : 10711-LCSD
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.862	1255	VV	.059	.17420
1.082	146172	PB	.047	20.28907
1.885	289611	PB	.076	40.19878
2.204	283409	BB	.089	39.33794

*ID MB

* RUN #19434   MAR 3, 2022 10:37:17
START

RUN# 19434   MAR 3, 2022 10:37:17

IDENTIFIER : MB
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.425	469	PU	.062	31.18352
1.092	1035	PU	.060	68.81651

TOTAL AREA= 1504
MUL FACTOR=1.0000E+00

*ID 1763-1I

* RUN #19435   MAR 3, 2022 10:43:30
START

RUN# 19435   MAR 3, 2022 10:43:30

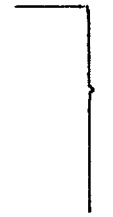
IDENTIFIER : 1763-1I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.065	1041	PU	.074	100.00000

TOTAL AREA= 1041
MUL FACTOR=1.0000E+00

*ID 1763-5A

* RUN #19436   MAR 3, 2022 10:49:40
START



RUN# 19436   MAR 3, 2022 10:49:40

IDENTIFIER : 1763-5A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.080	1099	PP	.062	100.00000

TOTAL AREA=   1099
MUL FACTOR=1.0000E+00

*ID 1763-6I

* RUN #19437   MAR 3, 2022 10:55:48
START

RUN# 19437   MAR 3, 2022 10:55:48

IDENTIFIER : 1763-6I
AREA%

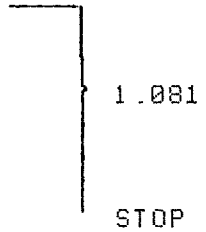
RT	AREA	TYPE	WIDTH	AREA%
1.080	1108	PP	.056	100.00000

TOTAL AREA=   1108
MUL FACTOR=1.0000E+00

*

*ID 1763-10A

* RUN #19438   MAR 3, 2022 11:09:13
START



RUN# 19438   MAR 3, 2022 11:09:13

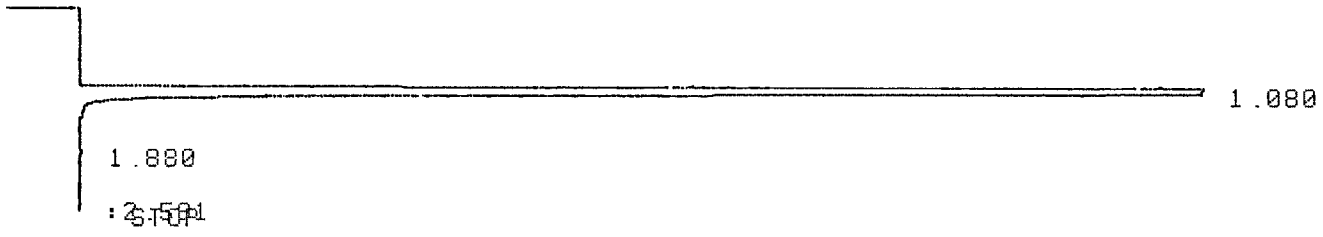
IDENTIFIER : 1763-10A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.081	874	PU	.057	100.00000

TOTAL AREA=   874
MUL FACTOR=1.0000E+00

*ID 1763-11I

* RUN #19439   MAR 3, 2022 11:15:32
START



RUN# 19439   MAR 3, 2022 11:15:32

IDENTIFIER : 1763-11I
AREA%

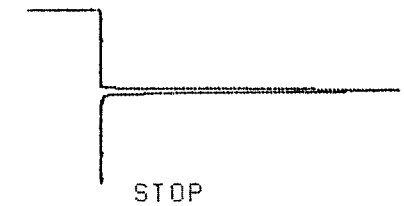
RT	AREA	TYPE	WIDTH	AREA%
1.080	2593754	PB	.053	99.98326
1.880	434	PU	.049	.01673

TOTAL AREA=2594189
MUL FACTOR=1.0000E+00

STOP

*ID 1763-11I-78X

* RUN #19440   MAR 3, 2022 11:36:09
START



STOP

RUN# 19440   MAR 3, 2022 11:36:09

IDENTIFIER : 1763-11I-78X
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.076	47679	PU	.046	100.00000

TOTAL AREA= 47679
MUL FACTOR=1.0000E+00

* PLOT

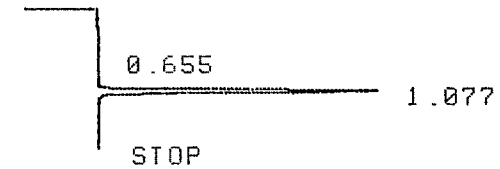
STOP

* PLOT

STOP

*ID 1763-11I-78XDUP

* RUN #19441   MAR 3, 2022 11:46:14
START



RUN# 19441   MAR 3, 2022 11:46:14

IDENTIFIER : 1763-11I-78X
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.077	44421	BB	.046	100.00000

TOTAL AREA= 44421
MUL FACTOR=1.0000E+00

*ID 1763-15A

* RUN #19442   MAR 3, 2022 11:54:39
START

RUN# 19442   MAR 3, 2022 11:54:39

IDENTIFIER : 1763-15A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.069	825	PU	.045	100.00000

TOTAL AREA= 825
MUL FACTOR=1.0000E+00

*

*ID 1763-16I

* RUN #19443   MAR 3, 2022 12:11:05
START

RUN# 19443   MAR 3, 2022 12:11:05

IDENTIFIER : 1763-16I
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.074	967	BP	.055	100.00000

TOTAL AREA=   967
MUL FACTOR=1.0000E+00

*ID ID 1763-21A

* RUN #19444   MAR 3, 2022 12:23:51
START

RUN# 19444   MAR 3, 2022 12:23:51

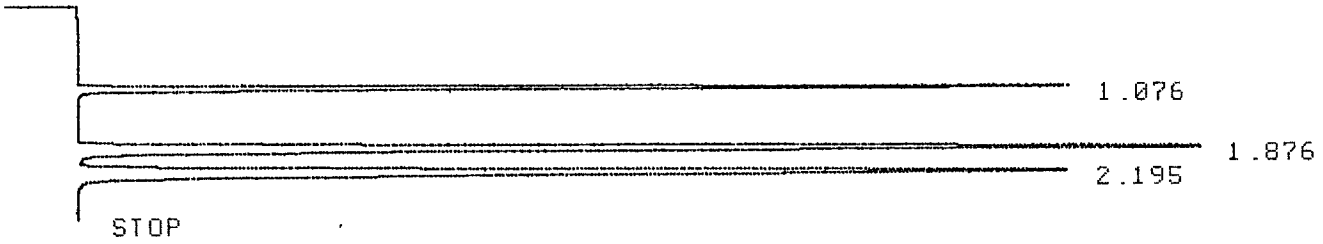
IDENTIFIER : ID 1763-21A
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.080	1085	PP	.066	100.00000

TOTAL AREA=   1085
MUL FACTOR=1.0000E+00

*ID 12173-500X-CCV

* RUN #19445   MAR 3, 2022 12:32:14
START



RUN# 19445   MAR 3, 2022 12:32:14

IDENTIFIER : 12173-500X-C
AREA%

RT	AREA	TYPE	WIDTH	AREA%
1.076	154255	BB	.045	20.37074
1.876	302352	BB	.075	39.92827
2.195	300631	BB	.089	39.70099

TOTAL AREA= 757238
MUL FACTOR=1.0000E+00

*

Energy Laboratories Inc

Spike LOG

Standard ID:	12173		
Standard Name	HC-Methane-W-CCV	Type:	Primary
Date Prepared	11/22/2019	BY:	
Date Expires:	11/23/2023		
Department	GAS	Status:	New
Vendor:	Matheson		
Lot Number:	109-96-04454		
Balance ID:			

Comments: CCV Gas Standard for Methane, Ethene, Ethane: 50000ppm stock diluted from 100 - 500ppm with Helium for CCV. Diluted from 2.5ppm - 1000ppm with Helium for Calibration.

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
3 Multi-Component Gas Standard in Ni	12173		mL	11/23

Final Volume: mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**

MATHESON TRI-GAS INC
1650 Enterprise Pkwy
Twinsburg, OH 44087
1-215-648-4000

CERTIFICATE OF ANALYSIS

Energy Laboratories Inc
1120 South 27th Street
Billings, MT 59101

Ref Po# 3008099

14 LITER DISPOSABLE

LOT NUMBER: 109-96-04454

COMPONENT	CONCENTRATION	
methane	50010	ppm
ethane	50030	ppm
ethylene	50030	ppm
nitrogen	Bal	

ITEM NUMBER: GMT2685284TC

CGA: 160

PSIG: 240

FILL DATE: 11/22/19

EXPIRATION DATE: 11/23/23

ID #: 12173
Opened:_____
3 Multi-Component Gas Standard in Nitrogen
Expires: 11/23/2023
Rec'd: 12/3/2019
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107

Above are the results of the analysis you requested, as reported by our laboratory. Results are in mole percent, unless otherwise indicated. Mixture accuracy is ± 2%. NIST traceable by weights or gaseous standards.

Judith M Zadravec

Judy Zadravec, Chemist

10/19/2018
DATE

Energy Laboratories Inc

Spike LOG

Standard ID:	10711		
Standard Name	HC-Methane-W-CCV	Type:	Primary
Date Prepared	8/8/2018	BY:	
Date Expires:	8/9/2022		
Department	GAS	Status:	New
Vendor:	Matheson		
Lot Number:	109-86-03507		
Balance ID:			

Comments: LCS Gas Standard for Methane, Ethene, Ethane: 100ppm per standard used undiluted for LCS

Chemical / Solvent Used	BottleNo	Amt	Units	Exp
3 Multi-Component Gas Standard in Ni	10711		mL	8/9/2

Final Volume: mL

Stock Source	**Base Units**	**Amount Added**
Analytes	**CAS**	Conc: **ug/mL**

Page: *1 of 1*

MATHESON TRI-GAS INC
1650 Enterprise Pkwy
Twinsburg, OH 44087
1-215-648-4000

CERTIFICATE OF ANALYSIS

Energy Laboratories Inc
1120 South 27th Street
Billings, MT 59101

Ref Po# 3005062

14 LITER DISPOSABLE

LOT NUMBER: 109-86-03507

COMPONENT	CONCENTRATION	
methane	100.0	ppm
ethane	100.0	ppm
ethylene	100.0	ppm
nitrogen	Bal	

ITEM NUMBER: GMT2677328TC

CGA: 160

PSIG: 240

FILL DATE: 08/08/18

EXPIRATION DATE: 08/09/22

Above are the results of the analysis you requested, as reported by our laboratory. Results are in mole percent, unless otherwise indicated. Mixture accuracy is ± 2%. NIST traceable by weights or gaseous standards.

Judith M Zadravec

Judy Zadravec, Chemist

8/14/2018

DATE

ID #: 10711
Opened:
3 Multi-Component Gas Standard in Nitrogen
Expires: 8/9/2022
Rec'd: 8/27/2018
Energy Laboratories Inc 1120 So. 27th Street
Billings MT 59107